

Serial No.: 09/770,074  
Group Art Unit: No.: 2684

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

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**Listing of Claims:**

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Claim 1 (Currently amending): A method of cost-sensitive control of data transfer between a mobile entity and a data network through a cellular radio  
10 infrastructure, the method ~~involving~~ comprising carrying out the following steps at a service system ~~connected to the data network,~~

AI  
Cost-  
15 (a) receiving a transfer descriptor indicative of, at least in ~~general terms,~~ generally, the end points of a required data transfer, and of transfer criteria to be met by this transfer, these criteria comprising at least a cost criterion, and a delay criterion being indicative of an acceptably delay before transfer initiation ~~to be met by the data transfer;~~

20 (b) determining by reference to both current and future data-transfer tariffs whether and, if so, how, the data transfer can be effected within the transfer criteria;

(c) where step (b) produces a positive determination, instructing initiation of the data transfer in accordance therewith ~~that determination.~~

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Claim 2 (Currently amending): A method according to claim 1, wherein the transfer descriptor complies with one of the following instances, said instances being selected from the group consisting of: the transfer descriptor is supplied by a mobile entity and concerns downloading of data from the entity;  
30 the transfer descriptor is supplied by a mobile entity and concerns uploading of data to the entity; the transfer descriptor is supplied by a network-connected

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resource and concerns downloading of data from a mobile entity; the transfer descriptor is supplied by a network-connected resource and concerns uploading of data to a mobile entity, and any combinations thereof.

- 5            Claim 3 (Original): A method according to claim 1, wherein the cost criterion sets a maximum cost for effecting the data transfer.

- Claim 4 (Original): A method according to claim 1, wherein the cost criterion specifies that the data transfer is to be effected at lowest cost  
10            consistent with the other transfer criteria, if any.

- Claim 5 (Currently amending): A method according to claim 1, wherein the cost criteria ~~criterion~~ and the delay criteria are jointly expressed as ~~comprises~~ a delay-dependent cost function for which the acceptable delay  
15            before transfer can be effected decreases with the maximum acceptable cost for the transfer, step (b) serving to determine the lowest cost at which the data transfer can be effected within a delay acceptable for that cost according to said cost function.

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- 20            Claim 6 (Currently amending): A method according to claim 1, wherein the cost criteria ~~criterion~~ and the delay criteria are jointly expressed as ~~comprises~~ a set of cost functions for each of which the acceptable delay before transfer can be effected decreases with the maximum acceptable cost for the transfer, successive cost functions of the set, other than a first cost function,  
25            having higher maximum acceptable cost for a given delay than a preceding cost function of the set, step (b) using each cost function in succession, starting with said first cost function, until a positive determination is made for effecting the data transfer at a cost which is within the function currently being used, this cost being the lowest cost at which the data transfer can be effected  
30            within a delay acceptable for that cost according to said cost function.

Claim 7 (Original): A method according to claim 1, wherein the transfer descriptor indicates that the data transfer is to be repeated according to a predetermined schedule, the method involving repeating steps (b) and (c) for that transfer descriptor according to said schedule.

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Claim 8 (Currently amending): A method according to claim 1, wherein said transfer criteria further comprise ~~at least one of a minimum transfer bit rate and a maximum delay before transfer initiation.~~

10 Claim 9 (Original): A method according to claim 1, wherein the transfer descriptor references a predetermined set of transfer criteria accessible to the service system.

Claim 10 (Original): A method according to claim 1, wherein step (b)  
15 involves accessing tariff data for the cellular radio infrastructure, the tariff data being available through at least one of the following mechanisms: pre-loaded into the service system from information provided off-line; pre-fetched over the data network from a tariff server and stored at the service system; fetched as needed over the data network from a tariff server; provided by the  
20 infrastructure in response to a specific enquiry detailing the data transfer.

Claim 11 (Original): A method according to claim 1, wherein step (b) involves a negotiation conducted between the service system and a server representing the infrastructure.

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Claim 12 (Original): A method according to claim 1, wherein step (b) involves specifying the required data transfer and the transfer criteria to a server representing the infrastructure and receiving back an indication of whether the infrastructure can effect the transfer as specified.

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Claim 13 (Original): A method according to claim 1, wherein step (b)

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involves considering more than one cellular radio infrastructure for effecting the transfer and selecting the infrastructure that provides the lowest-cost fit with the transfer criteria.

5           Claim 14 (Original): A method according to claim 1, wherein step (b) involves considering multiple data-transfer service providers for effecting the transfer and selecting the service provider that provides the lowest-cost fit with the transfer criteria.

10           Claim 15 (Original): A method according to claim 1, wherein step (b) involves considering more than one cellular radio infrastructure for effecting the transfer and carrying out an auction between the infrastructures to determine which infrastructure is to be used.

15           Claim 16 (Cancelled).

            Claim 17 (Original): A method according to claim 1, wherein step (c) involves sending a message to one endpoint of the data transfer specifying the set up of data transfer by that endpoint in accordance with said determination  
20    effected in step (b).

            Claim 18 (Original): A method according to claim 1, wherein step (c) involves the service system contacting the infrastructure to initiate data transfer set up by the infrastructure in accordance with the determination effected in  
25    step (b).

            Claim 19 (Original): A method according to claim 1, wherein step (c) involves the service system effecting the data transfer through itself including by setting up a data transfer path with the mobile entity through the cellular  
30    radio infrastructure in accordance with the determination made in step (b).

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Claim 20 (Original): A method according to claim 1, wherein the data transfer concerns a transfer of data to the mobile entity, the data to be transferred being passed to the service system along with the transfer descriptor where it is temporarily stored, step (c) involving initiating a transfer to  
5 the mobile entity, of the data temporarily stored at the service system.

*Currently Amended*  
Claim 21 (~~Original~~): A method of effecting real-time regulation of data traffic through a cellular radio infrastructure, comprising the steps of:

10 (i) effecting traffic-dependent changes to the tariff structure for data transfer through the infrastructure and making the current tariff structure accessible over to a data network; and

*A1 Cont.*  
15 (ii) effecting ~~the method of claim 1~~  
receiving a transfer descriptor indicative of a plurality of end points of said data transfer, and a transfer criteria, said transfer criteria having a cost criteria and a delay criteria being indicative of an acceptable delay before a transfer initiation;

20 (iii) determining by reference to a current data transfer and by reference to a future data transfer, whether said data transfer is complementary to said transfer criteria, and where a positive determination is produced, instructing an initiation of said data transfer, and wherein said service system is used for said  
25 data transfer, said using a service system being connected to the data network referred to in step (i).

Claim 22 (Currently amending): A service system ~~with means for effecting each of the method steps of claim 1~~ cost-sensitive control of data transfer  
30 between a mobile entity and a data network through a cellular radio infrastructure, the service system comprising:

an input for receiving, from a transfer requestor, a transfer descriptor indicative of: at least in general terms, the end points of a required data transfer, and transfer criteria to be met by the data transfer, these criteria  
5 comprising at least a cost criterion, and a delay criterion indicative of an acceptable delay before transfer can be effected;

a determination device for determining by reference to both current and future data-transfer tariffs whether and, if so, how, the data transfer can be  
10 effected within the transfer criteria;

an output responsive to a positive determination by the determination device, to send a message for instructing initiation of the data transfer in accordance with that determination.  
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Cost

Claim 23 (New): A service system according to claim 22, wherein the cost and delay criteria are jointly expressed as a delay-dependent cost function for which the acceptable delay before transfer can be effected decreases with the maximum acceptable cost for the transfer, the determination device being  
20 arranged to determine the lowest cost at which the data transfer can be effected within a delay acceptable for that cost according to said cost function.

Claim 24 (New): A service system according to claim 22, wherein the cost and delay criteria are jointly expressed as a set of cost functions for each of  
25 which the acceptable delay before transfer can be effected decreases with the maximum acceptable cost for the transfer, successive cost functions of the set, other than a first cost function, having higher maximum acceptable cost for a given delay than a preceding cost function of the set, the determination device being arranged to use each cost function in succession, starting with said first  
30 cost function, until a positive determination is made for effecting the data transfer at a cost which is within the function currently being used, this cost

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being the lowest cost at which the data transfer can be effected within a delay  
acceptable for that cost according to said cost function.

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